

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended): A sheet sucking/feeding device which sucks an uppermost sheet among a plurality of stacked sheets, and separates the uppermost sheet from a sheet therebeneath and feeds the uppermost sheet out, said device comprising:

a plurality of suction cups provided at predetermined intervals along a transverse direction of the sheet, and sucking the sheet; and

a suction cup operation device which is operative to displace the plurality of suction cups over a predetermined stroke in a suction cup axial direction, and which, at a point in time when the sheet is sucked by the plurality of suction cups and raised up by a predetermined amount, displaces at least every other one of the plurality of suction cups independently of others of the suction cups, so as to cause the sucked sheet to curve wavily along the transverse direction;

wherein the at least every other one of the plurality of suction cups comprise a first group of suction cups, and the others comprise at least a second group of suction cups.

2. (original): The sheet sucking/feeding device of claim 1, wherein the suction cup operation device comprises actuators connected independently to the respective suction cups, and when the sheet is sucked and raised up by the predetermined amount, the suction cup operation device displaces the suction cups by simultaneously driving at least every other one of the actuators.

3. (Previously Presented): The sheet sucking/feeding device of claim 2, wherein the at least every other one of the actuators are a group of actuators, and a plurality of groups of actuators are set overall, and the respective groups of actuators are driven alternately.

4. (original): The sheet sucking/feeding device of claim 1, wherein the suction cup operation device comprises a cam mechanism having cams which engage independently with the respective suction cups, and when the sheet is sucked and raised up by the predetermined amount, the suction cup operation device displaces the suction cups by simultaneously making at least every other one of the cams of the cam mechanism engage.

5. (original): The sheet sucking/feeding device of claim 4, wherein at least every other one of the cams are a group of cams, and a plurality of groups of cams are set overall, and the respective groups of cams are driven alternately.

6. (Currently Amended): The sheet sucking/feeding device of claim 1, wherein the at least every other one of the plurality of suction cups comprise a first group of suction cups, and the others comprise at least a second group of suction cups, and a rigidity of a skirt portion of the first group of suction cups is greater than a rigidity of a skirt portion of the at least second group of suction cups,

the suction cup operation device comprises a pressure reducer reducing a suction negative pressure of at least the first group of suction cups among the suction cups, and

when the sheet is sucked and raised up by the predetermined amount, the suction cup operation device deforms the skirt portions of the first group of suction cups by reducing the suction negative pressure of the first group of suction cups by the pressure reducer.

7. (Currently Amended): The sheet sucking/feeding device of claim 1, wherein ~~at least every other one of the plurality of suction cups comprise a first group of suction cups and the others comprise at least a second group of suction cups, and a rigidity of a skirt portion of the first group of suction cups is greater than a rigidity of a skirt portion of the at least second group of suction cups,~~

the suction cup operation device comprises a pressure reducer reducing a suction negative pressure of at least one of the first group and second group of the suction cups, and

when the sheet is sucked and raised up by the predetermined amount, the suction cup operation device deforms the skirt portions of the at least one of the first group and second group of suction cups by simultaneously reducing the suction negative pressure of the at least one of the first group and second group of suction cups by the pressure reducer.

8. (Previously Presented): The sheet sucking/feeding device of claim 1, wherein skirt portions of the suction cups have a same rigidity,

the suction cup operation device includes a pressure reducer individually reducing suction negative pressures of the suction cups, and

when the sheet is sucked and raised up by the predetermined amount, the suction cup operation device reduces the suction negative pressure of at least every other one of the plurality

of suction cups by the pressure reducer so as to deform the skirt portion of said at least every other one of the plurality of suction cups.

9. (original): The sheet sucking/feeding device of claim 2, wherein the actuators are structured to include solenoids.

10. (original): The sheet sucking/feeding device of claim 9, wherein the actuators are respectively connected to shafts of the suction cups via lift-up levers, and can raise up the suction cups.

11. (original): The sheet sucking/feeding device of claim 10, wherein springs for ensuring a buffer stroke are wound on the shafts of the suction cups.

12. (original): The sheet sucking/feeding device of claim 10, wherein the actuators and the lift-up levers are disposed, together with the suction cups, at a single base plate provided along the transverse direction of the sheets, so as to form a unit.

13. (original): The sheet sucking/feeding device of claim 10, wherein the suction cup operation device having the actuators and the lift-up levers is provided separately from the suction cups.

14. (Currently Amended): A method of sucking and feeding a sheet which sucks an uppermost sheet among a plurality of stacked sheets, and separates the uppermost sheet from a sheet therebeneath and feeds the uppermost sheet out, said method comprising:

sucking the sheet by a plurality of suction cups provided along a transverse direction of the sheet; and

after sucking the sheet, raising the sheet up by a predetermined amount by the plurality of suction cups, and causing the sheet to curve wavily along the transverse direction by stroke-displacing at least every other one of the plurality of suction cups independently of others of the plurality of suction cups

wherein the at least every other one of the plurality of suction cups comprise a first group of suction cups, and the others comprise at least a second group of suction cups.

15. (original): The method of claim 14, wherein the sucking the sheet includes sucking the sheet by a plurality of suction cups provided along the transverse direction of the sheet.

16. (original): The method of claim 15, wherein the raising the sheet up includes stroke-displacing at least one of the suction cups independently of others of the suction cups, in an axial direction of the suction cups.

17. (original): The method of claim 15, wherein the causing the sheet to curve includes causing at least every other cam mechanism among cam mechanisms corresponding to the respective suction cups, to engage with a corresponding suction cup and displace the corresponding suction cup.

18. (Previously Presented): The method of claim 15, wherein causing the sheet to curve includes partially deforming at least every other one of the plurality of suction cups by reducing a suction pressure of the at least one suction cup.

19. (original): The method of claim 15, wherein the causing the sheet to curve includes repeatedly reducing pressure of the suction cups.

20. (original): The method of claim 15, wherein causing the sheet to curve includes reducing pressure in accordance with a combination of the suction cups and highly-rigid suction cups.